Bonneville Power Administration
Fish and Wildlife Program FY99 Proposal

Section 1. General administrative information

Lower Klickitat River Riparian & In-Channel Habitat Enhancement Project

Bonneville project number, if an ongoing project 9705600

Business name of agency, institution or organization requesting funding
Yakama Indian Nation - Fisheries

Business acronym (if appropriate) YIN

Proposal contact person or principal investigator:

Name Mel Sampson
Mailing Address P.O.Box 151
City, ST Zip Toppenish, Wa. 98948
Phone 509-865-6262
Fax 509-865-6293
Email address yinfish@yakama.com

Subcontractors.

Organization	Mailing Address	City, ST Zip	Contact Name
Northwest Service Academy (NWSA)	2500 NE 65 Ave	Vancouver, Wa. 98661	John Stewart
Cahill's Well Drilling	173 Cahill Rd.	Goldendale, WA. 98620	Mr. Trampas
Land Appraisal	to be developed		
Archaeological Survey	to be developed		

NPPC Program Measure Number(s) which this project addresses.
7.6A, 7.6A2, 7.6B.3, 7.6B.6, 7.6D, 7.7, 7.8E.2

NMFS Biological Opinion Number(s) which this project addresses.

Other planning document references.

Wy Kan Ush Me Wa Kush Wit, Klickitat Subbasin Plan, CRFMP, Washington State Salmon and Steelhead Stock Inventory (SASSI, 1992)

Subbasin.
Swale Creek basin of Klickitat River, in future years project will incoorperate Little Klickitat, Dillacort, Snyder, Wheeler Canyon, Trout, Summit and White Creeks

Short description.
Improve habitat and riparian conditions for steelhead, coho with cattle exclosure fencing, land aquistions, large woody debris, enhance pool formation, capture spawning gravels, revegetation of riparian areas, augment summer flows, reduce sediment.

Section 2. Key words

Mark	Programmatic Categories	Mark	Activities	Mark	Project Types
X	Anadromous fish	X	Construction	X	Watershed
*	Resident fish		O & M		Biodiversity/genetics
*	Wildlife		Production		Population dynamics
	Oceans/estuaries		Research		Ecosystems
	Climate	*	Monitoring/eval.	*	Flow/survival
	Other	*	Resource mgmt		Fish disease
			Planning/admin.		Supplementation
			Enforcement	*	Wildlife habitat en-
		*	Acquisitions		hancement/restoration

Other keywords.
Increase survival of depressed winter-run steelhead, ettenuation of hydrograph, off-channel watering systems, key land aquistions, create favorable summer rearing habitat.

Section 3. Relationships to other Bonneville projects

Project #	Project title/description	Nature of relationship
9506800	Klickitat Passage/Habitat Preliminary Design	Baseline data collection through project 9506800 can used to more effectively direct watershed project in the Klickitat basin.

Section 4. Objectives, tasks and schedules

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Increase survival and production of salmonids in tributary streams of the lower Klickitat through livestock management.	a	Exclusion or management of livestock grazing
		b	development of off-channel livestock watering systems
		c	Plant riparian vegetation within exclusion fencing to reestablish riparian corridor.
		d	Work with local rancher to develop grazing practices to minimize impacts to riparian cooridor.
2	Increase survival and production of salmonids in tributary streams of the lower Klickitat through control of fine sediment delivery and improve water quality.	a	Construct sediment retention ponds in key drainages to reduce impacts from fine sediments from agricultural practices.
		b	Riparian revegetation along stream corridor to increase stream shading and lower stream temperatures.
3	Increase survival and production of salmonids in tributary streams of the lower Klickitat through attenuation of the hydrograph.	a	Contruct retention ponds to create wet meadow habitat to retain runoff and reduce the peak of the hydrograph.
4	Increase survival and production of salmonids in tributary streams of the lower Klickitat through acquisition of key habitat.	a	Identifiy and pursue purchase of key habitat from willing landowners
		b	Devlopment of conservation easements with willing landowners.
5	Increase survival and production of salmonids in tributary streams of the lower Klickitat through construction of in-	a	In suitable areas design and install instream structures to increase the pool to riffle ratio

	channel habitat structures.		
		b	In suitable areas incorporate large woody debris into the stream channel.
6	Monitor habitat improvements	a	Conduct standarized habitat inventory methodology at routine intervals to monitor changes to channel (TFW Ambient Monitoring)
		b	Conduct standarized salmonid population monitoring at routine intervals to monitor changes over time (snorkel transects).

Objective schedules and costs

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	9/1997	9/2010	35.00%
2	9/1997	9/2010	10.00%
3	9/1997	9/2010	10.00%
4	9/1997	9/2010	30.00%
5	9/1997	9/2010	10.00%
6	9/1997	9/2010	5.00%
			TOTAL 100.00%

Schedule constraints.
None are anticipated

Completion date.
2010, with M&E to continue for several more years

Section 5. Budget

FY99 budget by line item

Item	Note	FY99
Personnel	1/2 Bookkeeper, 1/12 YIN Biologist, 1/4 WDFW biologist no cost. additional cost share NRCS USFWS	$11,000
Fringe benefits	15.3 %	$1,683
Supplies, materials, non-expendable property	Fencing supplies, tools, rooted stock, cuttings, in-channel structures	$70,000
Operations & maintenance	Materials and analysis TFW habitat	$7,000

	monitoring for project	
Capital acquisitions or improvements (e.g. land, buildings, major equip.)	Land acquisition, off-channel livestock watering	$95,000
PIT tags	# of tags: none	$0
Travel	none	$0
Indirect costs	23.6%	$40,000
Subcontracts	NWSA conduct project labor. Local contractors selected through competitive bidding for construction	$71,000
Other		
TOTAL		$295,683

Outyear costs

Outyear costs	**FY2000**	**FY01**	**FY02**	**FY03**
Total budget	$350,000	$350,000	$350,000	$350,000
O&M as % of total	5.00%	8.00%	8.00%	8.00%

Section 6. Abstract

Through restoration efforts, it is expected that critical habitat for salmonid production will be increased and can be demonstrated. Through monitoring, the project can be assessed for its ability to meet target objectives for riparian conditions and in-channel habitat, as well as judge effects on production of salmonids. This knowledge can be applied to future projects for determining expected outcomes and benefits to habitat enhancement. The objective of the project is to improve spawning, rearing and holding habitat, stabilize stream banks and channels, revegetate riparian corridors with beneficial deciduous and coniferous species, deter grazing impacts, and provide adequate summer flows for fish passage and rearing. The project work is also expected to improve water quality by reducing erosion, filtrating and storing fine sediments, augmenting canopy cover for temperature moderation and reducing livestock waste from entering waters. Through restoration efforts on the channel, available habitat is anticipated to increase by at least two-three fold for spawning, juvenile rearing, velocity refugia, and adult holding. This project ties specifically to 1994 CBFWP goals of an ecosystem approach to species recovery through protection and improvement to habitat conditions. This coordinated approach brings together land managers and landowners to develop a habitat plan to protect an important natural resource.

These improvements will benefit both anadromous and resident salmonid populations (steelhead, chinook and coho salmon, rainbow and cutthroat trout) in the Klickitat River.

Project duration will be from September 1997 through September 2010. TFW Ambient Monitoring of habitat conditions and fish populations before and after completion of project work will quantify whether objectives were attained.

Section 7. Project description

a. Technical and/or scientific background.

Restoration efforts will be directed toward lower Klickitat basin tributaries between rivermile 5.4 and 37.4. These tributaries provide important spawning and rearing areas primarily for winter and summer steelhead. The lower reaches of these tributaries provide important juvenile rearing for all anadromous stocks found in the Klickitat Basin. Lower basin tributaries are most severely impacted by agricultural and human development. Extensive wheat farming and development has increased drainage density, sediment runoff and reduced natural vegetative interception.

A deficiency of in-channel pool frequency and depth for summer and winter rearing, spawning gravel area and quality, velocity breaks for juvenile and adult holding, and overhead cover, has been identified in segments of these tributaries. In addition, some riparian areas along these project streams lack ground cover, trees for long-term recruitable large woody debris, shade, and bank stability. Inadequate flows have also led to loss of summer rearing habitat and adult holding water. All of these habitat problems have contributed to a reduction in fish populations. At least three of the anadomous runs in the Klickitat River (coho and spring chinook, winter steelhead) are considered depressed stocks in the Washington State Salmon and Steelhead Stock Inventory (SASSI, 1992).

The general approach for this project entails monitoring and review of existing information to determine current conditions, planning and designs to correct identified problems, implementation of enhancement measures and eventually post-monitoring upon completion of all restoration work (five years) to determine if project objectives have been attained. Monitoring will be conducted to evaluate habitat and riparian conditions. Monitoring will follow accepted protocol described in the TFW Ambient Monitoring Manual (Schuett-Hames et al 1994). The focus of the monitoring will be on the parameters of large woody debris, canopy cover, pool area and frequency, stream width and depth, and vegetative conditions. One limitation of the monitoring is the short time frame for evaluation. In-channel habitat and water quality changes should be discernable in the overall ten-year project time frame. However, efforts to enhance riparian vegetation may not be noticeable in the five year period. Monitoring therefore may be needed beyond five years to properly assess all changes to conditions. The planning and implementation of riparian and habitat work will be tailored to the findings of the monitoring. In areas of grazing impact, plans will be developed to limit or exclude

livestock. Rehabilitation could also include revegetation with desired riparian plant species (woody coniferous and deciduous components). Streams identified with little or no pool habitat could have designs for in-channel structure and wood placement to increase pool formation. In areas of active bank or channel erosion, grade control structures and bank protection measures will be considered. Where fine sediment delivery is found, changes in land management and/or the construction of retention ponds and wetlands will be determined. Vegetation establishment on these sites may also be required to provide filtration and rooting strength. In cases where critical areas are being impacted, but landowner cooperation can not be attained, land purchase will be sought to provide long-term protection needs. Finally, monitoring will be conducted after all restoration work to quantify changes to habitat and production from the project.

b. Proposal objectives.

The objective of the project is to improve spawning, rearing and holding habitat, stabilize stream banks and channels, revegetate riparian corridors with beneficial deciduous and coniferous species, deter grazing impacts to the riparian area and stream channel, and provide adequate summer flows for fish passage and rearing. The project work is also expected to improve water quality by reducing erosion, filtrating and storing fine sediments, augmenting canopy cover for temperature moderation and reducing livestock waste from entering waters. Through restoration efforts on the channel, available habitat is anticipated to increase by at least two-three fold for spawning, juvenile rearing, velocity refugia, and adult holding. These improvements should benefit both anadromous and resident salmonid populations (steelhead, chinook and coho salmon, rainbow and cutthroat trout) in the Klickitat River. Ambient monitoring of habitat conditions and fish populations before and after completion of project work will quantify whether objectives were attained.

The goal of the project will be enhancement of habitat conditions and water quality within important anadromous stream reaches of lower Klickitat River tributaries. To achieve the goal, several objectives are proposed. Immediately prior to project inception WDFW funded an intensive stream inventory to identify areas of where impacts to stream habitat were most severe. This identification of habitat and riparian problems was developed through existing information and monitoring. Previous monitoring by Yakama Nation personnel and the Washington Department of Ecology has identified problems with stream temperatures and in-stream flows in some of these lower Klickitat River tributaries (section 303d list of water quality impaired streams of Washington, Yakima/Klickitat Natural Production and Enhancement Program, 1989, 1990, 1995). In addition, many of the project streams have been identified by Yakama Nation personnel to lack pool area, large woody debris, pool depth, overhead cover, and spawning gravel quantity and quality.

After initial information gathering it was determine the first project objective should be to restore riparian health and vigor. This was approached by the design and installation of cattle enclosure fencing, riparian revegetation and development of off-channel watering systems.

The second project objective was determined to be the control of fine sediment delivery into the Swale Creek basin. Due to the extensive agricultural use in the upper basin fine sediment delivery into the stream channel has been accelerated. The increased drainage density and unnatural hydrograph spike as a result of agricultural practices have necessitated installation of sediment retention ponds at strategic locations in the basin.

The third project objective is the installation of earthen ponds at strategic locals to restore wet meadow function to the upper basin of Swale Creek. This activity will help restore a natural hydrograph to the system. The increased baseflow will deliver cooler water to the system throughout summer months.

The fourth project objective to actively pursue the purchase of key piece of habitat though willing landowners. Through the initial stream inventory areas of key spawning and rearing habitat were identified and prioritized. A land ownership map was then developed by project staff and will be used to pursue acquisition or develop a conservation easement with willing landowners.

The fifth project objective is enhancement of stream segments lacking optimum habitat conditions (pool area, large woody debris frequency, spawning gravel quantity and quality, velocity refuge) and reduction of bank and channel erosion.

The sixth project objective is the monitoring of riparian and in-channel restoration efforts. Annual TFW Ambient Monitoring will be conducted to monitor changes over time. Habitat inventories and salmonid population surveys will be conducted in all stream segments identified in the basin. An important component of TFW monitoring is photo documentation to identify areas of project success or failure.

c. Rationale and significance to Regional Programs.

The rationale behind this project is improvements to riparian and in-channel conditions, as well as water quality, will elevate survival and production rates for salmonids. The objectives of the project (monitoring, planning, riparian enhancement, in-channel habitat development and bank protection, livestock management, wetland and retention pond construction, and land acquisition for permanent protection) are designed to comprehensively enhance habitat conditions and water quality. This approach supports

the habitat objectives of the Columbia River Basin Fish and Wildlife Program. Project efforts should reduce fine sediment impacts on redds, improve bank stability, decrease summer stream temperatures, provide large woody debris to the stream, produce additional pool frequency, and enhance riparian vegetation. Past investigations in British Columbia and the states of Washington and Oregon have clearly shown the critical importance of in-channel habitat and adjacent riparian stands for salmonid production (Binns 1994, House 1996, Beschta 1991). Habitat enhancement and riparian revegetation work by the Yakama Nation in recent years has created additional rearing area and demonstrated use by juvenile salmonids. Projects initiated by the USFS in the Wenatchee National Forest have also increased the area available for salmonid rearing and have been shown to have juvenile salmonid use. The USFS also found, in some cases, an increased retention of spawning gravels.

It is expected that the project will provide immediate and future benefits to fish production, but the exact gains will not be known until monitoring is completed. In addition the length of time for complete stream recovery, or period until desired conditions are achieved, is not completely known. For example, optimal benefits from the revegetation of channel margins and riparian areas will require several years of plant growth.

Landowner agreements are likely to ensure that restoration work planned and implemented on their lands will be properly protected in future years.

d. Project history

An intensive one-month baseline stream survey (TFW Ambient Monitoring) was completed by the Northwest Service Academy. Results from this survey have identified areas to direct restoration efforts along Swale Creek.

To date cost sharing for the project has been developed with the following agencies:
WDFW Regional Enhancement Group- funding source for restoration projects early on in project.
WDFW- ¼ FTE biologist staff time for project leadership
NRCS- staff time for project design
NRCS- environmental quality incentive program- cost share opportunity to address significant natural resource needs and objectives
USF&WS- cost share or funding source for restoration work on their lands

First priority was given to construction of two miles of livestock enclosure fencing on the Max Frenandez sheep ranch. Installation of two sediment retention ponds on intermittent

streams which delivered large amounts of sediment laden run-off into Swale Creek were constructed on the Fernandez ranch. Completion of final design drawings of off-channel water system for livestock watering on the Fernadaz ranch, to be installed spring 1998. Subcontract development with well drilling company for watering system. Agreement with Fernandez to move entire sheep wintering operation to new location, away from free-flowing water.

One-half mile of cattle enclosure fencing on Patricia Martin property. Design completion of a sediment retention/livestock-watering pond to permanently exclude cattle from this stretch of stream. Design of an additional sediment retention pond at a key location on the Martin property to restore wet meadow function and help attenuate the Swale Creek hydrograph.

Development of habitat improvement option with Stan Crocker, the largest single landowner on Swale Creek. Crocker has given permission to additional fencing, riparian revegetation, and placement of instream structures within in his four plus miles of stream ownership.

Additionally, public meetings have been held to describe this BPA project and to enlist willing landowners. Increased public awareness has benefited this project tremendously, and will make project expansion into adjacent tributaries more effective.

Adaptive management practices are being used throughout project design and implementation. Associated projects within and outside the Klickitat Basin will be analyzed and project success incorporated into project strategies.

The amount budgeted for Project #5512800 is $202,237. The contract period is from 09/1997 to 08/1998.

e. Methods.

Much of this project area contains private lands. This project will continue to coordinate and seek cooperation from landowners to permit restoration work on their lands. Several landowners have already expressed interest in stream restoration and would like to participate in this project. In areas of critical habitat where cooperation can not be obtained, easements or land purchase may be sought to allow restoration work to take place.

All specific project sites will have a design and monitoring plan completed by the grantee or a subcontractor with restoration experience. Monitoring will be conducted both before and after restoration work. The monitoring (TFW Ambient Monitoring Protocol) will

assess the habitat features (large woody debris, pool area and frequency, residual pool depth, spawning gravel quality and quantity) , channel characteristics (wetted and bankfull width and depth), riparian condition (canopy cover, species composition), and limited fish population estimates (spawner surveys, electroshocking, snorkeling). The monitoring data will be analyzed to compare changes before and after the restoration work.

The design plans will include a description of existing conditions; actions needed to restore the channel and riparian areas to target conditions, logistics to complete the work, expected benefits from the work. Where channels are deficient in rearing habitat, restoration efforts may include placement of large woody debris, boulders, and or bank deflectors in the channel. This work is also expected to help retain/store spawning gravels. In areas of active bank erosion, bio-engineering practices may be utilized such as establishment of dense woody vegetation for rooting strength, placement of large rock at toes of erosion, and construction of bank deflectors to direct flows away from banks. In addition, exclosure fences may be installed where grazing activities would continue to thwart establishment of beneficial vegetation and cause ground disturbance and bank erosion.

Within riparian areas, stands with sparse or no vegetation may be inter-planted with appropriate coniferous or deciduous species to provide future wood recruitment to the channel, shade for temperature moderation, allochthonous nutrient delivery, and bank stability. Irrigation diversions, which cause inadequate summer stream flows for fish rearing and migration, may have water rights purchased to retain in-stream flows. Upon review and acceptance of the plans, the grantee or a subcontractor will carry out the work. The work will be evaluated by the grantee for its consistency in meeting the design plans and project objectives.

f. Facilities and equipment.

Indirect cost will be used for office rental and overhead for project staff. No other facilities will be required by this project.

Equipment used for this project will primarily be fencing, fence building materials and revegetation supplies. Local contractors will be subcontracted to perform heavy equipment operation and sediment retention pond excavation.

g. References.

Beschta, R.L. 1991. Stream Habitat Management for Fish in the Northwestern United States: The Role of Riparian Vegetation. American Fisheries Society Symposium 10:53-58.

Binns, A.N. 1994. Long-Term Responses of Trout and Macrohabitats to Habitat Management in a Wyoming Headwater Stream. North American Journal of Fisheries management 14:87-98.

Fast, D.E et al. 1989. Yakima/Klickitat Natural Production and Enhancement Program. Prepared for Bonneville Power Administration. Project No. 88-120 Grant DE-A179-88BP93203.

House, R. 1996. An Evaluation of Stream Restoration Structures in a Coastal Oregon Stream, 1981-1993. North American Journal of Fisheries Management 16:272-281

Hubble, J.D. et al. 1990. Yakima/Klickitat Natural Production and Enhancement Program. Prepared for Bonneville Power Administration. Project No. 88-120 Grant DE-A179-88BP93203.

Hubble, J.D. et al. 1991. Yakima/Klickitat Natural Production and Enhancement Program. Prepared for Bonneville Power Administration. Project No. 88-120 Grant DE-A179-88BP93203.

Hubble, J.D. et al. 1992. Yakima/Klickitat Natural Production and Enhancement Program. Prepared for Bonneville Power Administration. Project No. 88-120 Grant DE-A179-88BP93203.

Hubble, J.D. et al. 1993. Yakima/Klickitat Natural Production and Enhancement Program. Prepared for Bonneville Power Administration. Project No. 88-120 Grant DE-A179-88BP93203.

Section 8. Relationships to other projects

This project relates directly to WDFW Regional Enhancement Group (EG) efforts to restore stream habitat conditions within the Klickitat Basin. The EG has been instrumental in project development and enlisting community involvement. Additional, this project relates to the overall goal of the Klickitat portion of the YKFP. The YKFP goal is to restore anadromous fish runs to increase natural production and to improve harvest opportunities, while maintaining the long-term genetic fitness of the wild and native salmonid populations.

Project collaboration continues between Natural Resources Conservation Service (NRCS) and YIN in design of off-channel watering systems, sediment retention ponds and fence placement.

Section 9. Key personnel

Principal Investigator

Name: Lynn Hatcher
Address: 1380 Orchardvale , Zillah, WA 98953
Birthdate: February 10, 1951, Wichita, Kansas
Nationality: U.S.
Sex: Male

Education: High School: Mount Rainier, Des Moines, Washington, 1969
Bachelor of Science, College of Fisheries, University of Washington 1974

Work Experience: National Marine Fisheries Service: Summers 1970, 1971, 1972.

Participated in fur seal harvest and tagging studies on St. Paul Island, Alaska.

Quinault Indian Nation, Fisheries Biologist, 1974 to 1979.

Supervised :
Adult Escapement and enumeration studies for assessment of salmon and steelhead run dynamics.

Supervised and designed:
Aquatic productivity studies.

Participated in a wide range of aquaculture activities including brood stock acquisition, spawning operations, incubation, fry and smolt rearing, sampling, tagging, and release.

1980 Puget Sound Power and Light Company, Fisheries Biologist 1979-

Supervised:
Skagit River Aquatic Resources Program.

Yakama Indian Nation, Fisheries Biologist 1980-1982,

Supervised:
Data collection and analysis for tribal fisheries staff.

Yakama Indian Nation, Fisheries Program Manager, 1983-Present.

Supervised and Managed:
A team of professionals engaged in a variety of fisheries management activities.

Achievements:

National Marine Fisheries Service Incentive Award: 1970, 1971, 1972.

Yakama Nation Supervisor of the Year Award: 1991, 1996

Project Manager

William Sharp, YIN Fisheries Biologist 1/12 FTE
Bachelor of Science in Natural Resource Management with minor in Watershed Science. Colorado State University 1987.

Instream Flow Incremental Methodology (IFIM) certification Colorado State University 1988.

Current Employer:
Yakama Indian Nation Fisheries Resource Management Program
PO Box 151, Toppenish, WA. 98901
5/1989 to present

Current Responsibilities:
Project Manger for BPA project 9506800 11/12 FTE. This includes research design and development, daily field operation, data analysis and synthesis, report writing, budgeting, and subcontract development.

Recent Previous Employment:
U.S. Fish and Wildlife Service, Vancouver, WA.
August 1988 – May 1989
Conducted IFIM study on rivers throughout Oregon and Washington

Idaho Fish and Game, Region 3, Boise, ID.
March 1987 – October 1987
Constructed and operated adult and juvenile fish trapping facilities, snorkel and adult spawner surveys.

US Army Corps of Engineers, Walla Walla and Portland Districts
1983 – 1986
Conducted radio telemetry studies at five mainstem Columbia River Hydroelectric dams.

I have over eleven years of Pacific Northwest fisheries work experience. I have designed and implemented fisheries and habitat studies analyzed and presented data. I have managed field crews from 2-20 individuals. I have worked on habitat construction projects in the Yakima basin where we've constructed off-channel rearing structures, alcoves and velocity refugia to benefit depressed spring chinook stocks. As the lead biologist on the Klickitat Project 9506800 I have conducted all aspects of project design, budgeting, salmonid population monitoring at all life stages and stream habitat inventory.

Assistant Project Manager

William Weiler, Regional Volunteer Coordinator
Swale Creek Project On-Site Coordinator, ¼ FTE on Project # 5512800
Master of Science, Natural Resource Management, George Williams College, Chicago, IL. 1979
Bachelor of Science, Wildlife Biology, Oregon State University, Corvallis, OR. 1976

Current Employer:
Washington Department of Fish and Wildlife
1701 S. 24th Ave.
Yakima, WA. 98902

Current Responsibilities:
Project coordination with YIN. Meet with landowners and formulate restoration plans.
Supervision of 10 Americorps crew members assigned to project.
Order and distribute tools and materials. Consult with other agencies, pursuing expertise in fence building, and restoration practices.

Section 10. Information/technology transfer

The technical information resulting from this project (and its component tasks) will be distributed in the following ways:

- A completion (annual) report will be submitted to Bonneville at the close of the fiscal (calendar) year and Bonneville will distribute copies to all individuals and agencies on its mailing list.
- The project's tact of working with other agencies and landowners will increase awareness of restoration efforts. Positive results of the work will also be communicated to the local community.

- The work will be visible to the general public due to its relatively close proximity to roads and highways. Interpretive signs will be placed near project sites to inform the public of the work and effort completed. Public meetings are scheduled in early 1998.

- Local newspapers will be contacted to disseminate project information.

- TFW Ambient monitoring results will be presented in annual report along with photo documentation of restored areas.